[CLAIM]

[CLAIMS 1]

A method for illuminating in a liquid crystal display device, comprising the steps of:

i) allowing lights generated from a light source to be incident to a light guide plate;

ii) primarily diffusing the incident lights for uniformly distributing the luminous flux;

iii) primarily condensing the luminous flux of the primarily diffused lights with respect to a first orientation component on a plane in parallel with an LCD panel;

iv) secondarily and partially diffusing the luminous flux of the lights condensed to have the first orientation for extending a view angle of pixels of the LCD panel;

v) primarily condensing the luminous flux of the secondarily diffused lights with respect to a second orientation component that is perpendicular to the first orientation on the parallel plane; and

vi) illuminating the secondarily condensed lights onto the LCD panel.

[CLAIMS 2]

The method of claim 1, wherein the steps of iv) and v) are performed by a single sheet.

[CLAIMS 3]

A back-light assembly of a liquid crystal display device, comprising:

a light source for generating lights;

a light guide plate formed to one side of said light source for allowing said lights generated from said light source to be uniformly incident to an LCD panel side;

a first diffuser provided to the LCD panel side of said light guide plate for primarily diffusing the incident lights to uniformly distribute the luminous flux;

a first condenser provided to the LCD panel side of said first diffuser for primarily condensing the luminous flux of the primarily diffused lights with respect to a first orientation component on a plane in parallel with the LCD panel;

a second diffuser provided to the LCD panel side of said first condenser for partially and secondarily diffusing the luminous flux of the lights condensed to have the first orientation to enlarge a view angle of pixels of the LCD panel; and

a second condenser provided to the LCD panel side of said second diffuser for secondarily condensing the luminous flux of the secondarily diffused lights with respect to a second orientation that is perpendicular to the first orientation on the parallel plane.

[CLAIMS 4]

The back-light assembly of claim 3, wherein said second diffuser and said second condenser are formed in a single sheet.

[CLAIMS 5]

A back-light assembly of a liquid crystal display device, comprising:

a light source for generating lights;

a light guide plate formed to one side of said light source for allowing

said lights generated from said light source to be uniformly incident to an LCD panel side;

a first diffuser provided to the LCD panel side of said light guide plate for regulating an incidence angle of lights incident from said light guide plate to the direction of having higher front luminance with respect to the plane of the LCD panel via a repeated diffusion reflection processes, and primarily diffusing the lights to uniformly distribute the luminous flux of the incident lights;

a first condenser provided to the LCD panel side of said first diffuser for primarily condensing the luminous flux of the primarily diffused lights with respect to a first orientation component on a plane in parallel with the LCD panel;

a second diffuser for partially and secondarily diffusing the luminous flux of the lights condensed to have the first orientation to enlarge a view angle of pixels of the LCD panel; and

a second condenser for secondarily condensing the luminous flux of the lights condensed to have the first orientation with respect to a second orientation perpendicular to the first orientation on the parallel plane.

[CLAIMS 6]

The back-light assembly of claim 5, wherein said second diffuser is provided to the LCD panel side of said first condenser, and said second condenser is provided to the LCD panel side of said second diffuser, thereby condensing the luminous flux of the secondarily diffused lights.

[CLAIMS 7]

The back-light assembly of claim 5, wherein said first diffuser comprises

a plurality of beads formed to allow a haze value at a plane of said first diffuser adjacent to said first condenser to be higher than that at a plane of said first diffuser adjacent to said light guide plate.

[CLAIMS 8]

The back-light assembly of claim 5, wherein said first diffuser comprises a plurality of beads formed to a plane of said first diffuser adjacent to said light guide plate and a plane thereof adjacent to said first condenser, and the plurality of beads are distributed to have a higher density at the plane of said first diffuser adjacent to said first condenser than that at the plane of said first diffuser adjacent to said light guide plate.

[CLAIMS 9]

The backlight assembly of claim 5, wherein a haze value of said second diffuser is lower than that of said first diffuser.

[CLAIMS 10]

The back-light assembly of claim 5, wherein said second condenser is provided to said LCD panel side of said first condenser for secondarily condensing the luminous flux of the primarily condensed lights, and said second diffuser is provided to the LCD panel side of said second condenser for diffusing the luminous flux of the secondarily condensed lights.

[CLAIMS 11]

A liquid crystal display device, comprising:

an LCD panel; and

a back-light assembly including a) a light source for generating lights, b) a light guide plate for allowing the lights generated from the light source to be

incident to the LCD panel side, c) a diffuser provided to the LCD panel side of the light guide plate for primarily diffusing said incident lights to uniformly distribute the luminous flux of said incident lights, d) a condenser provided to the LCD panel side of the diffuser for primarily condensing the luminous flux of the primarily diffused lights with respect to a first orientation component on a plane in parallel with the LCD panel, and e) a high luminance condensing sheet provided to the LCD panel side of the condenser for diffusing and secondarily condensing the luminous flux of said primarily condensed lights.

[CLAIMS 12]

The liquid crystal display device of claim 11, wherein the high luminance condensing sheet comprises a diffusion layer for partially and secondarily diffusing the luminous flux of condensed lights from the condenser to increase a view angle of pixels of the LCD panel, and a condensing layer for secondarily condensing the luminous flux of the secondarily-diffused lights from the diffusion layer with respect to a second orientation component perpendicular to the first orientation on the parallel plane.

[CLAIMS 13]

The liquid crystal display device of claim 12, wherein the diffusion layer comprises a plurality of beads formed for uniformly diffusing the lights incident from the condenser.

[CLAIMS 14]

The liquid crystal display device of claim 13, wherein the content of said plurality of beads is about 10~50% of total weight of the diffusion layer.

[CLAIMS 15]

The liquid crystal display device of claim 12, wherein the condenser and the condensing layer are comprised of a plurality of prisms arranged in parallel with one another in a direction for condensing the lights incident from the diffuser and the diffusion layer.

[CLAIMS 16]

The liquid crystal display device of claim 12, wherein the condenser and the condensing layer are formed by arranging prisms to cross one another at a predetermined angle.

[CLAIMS 17]

The liquid crystal display device of claim 12, wherein the vertex portion of the prisms of the condensing layer adjacent to said LCD panel are rounded.